

132407-3

IN THE SPECIFICATION:

[0019] The electroless plating process generally comprises immersing the desired hydroelectric turbine component in a chemical aqueous salt plating bath using commercially available compositions that result in the deposition of an alloy, such as nickel, onto the component when the component is dipped into the electroless plating baths at the appropriate temperature, e.g., typically about 80 to about 95°C. The aqueous salt plating bath may comprise a nickel salt, a cobalt salt, an iron salt, or combinations comprising at least one of the foregoing salts as well as additional elements, e.g., boron, and phosphorous. For example, nickel electroless bath compositions that are commercially available may contain phosphorous or boron that also results in the deposition of the nickel boron and/or phosphorous alloys. The operating parameters and suitable electroless plating compositions are well known to those in the art. Incorporation of hard particles into the electroless coating can be provided by suspending the hard particles and other desired nano-precipitates in a suspension within the plating solution, and maintaining moderate agitation to prevent settling of the particles. Immersing the component into the electroless plating bath containing the suspended hard particles and/or additives ensures complete coating of the component. This process is particularly useful in coating complex shapes where it would be necessary to perform complex robotic motions for a thermal spray gun or for areas of components that a thermal spray gun either can not access or would be difficult to access such as between hydrofoil blades of a 1 meter diameter Francis runner having the blades spaced about 50 millimeters or less apart.